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Newsletter Spring 2004

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Department of

Environmental Science and Biology

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From the Department Chairman

Dr. Joseph Makarewicz

Much has happened in the two short years since the inception of the Department of Environmental Science and Biology. The number of majors is quickly approaching 100 students. Articulation agreements between Finger Lakes Community College, Monroe Community College, Ulster Community College and the Environmental Science major at SUNY Brockport are now complete. These agreements allow students to recognize course requirements at Brockport and to plan accordingly. Planning is underway for two graduate programs. The first is a traditional Master of Science program in which a student applies after completion of the Bachelor's degree. The second program is fairly unique in the sciences in that it is a combined BS/MS program that a student could complete with 120 credits of course work. The new freshmen course in Environmental Science developed by Dr. Haynes and Mr. Roosa has been a complete success. Over 60 students have signed each semester for this new course. Through the generous gift of **Mrs. Ann M. O' Reilly, the O'Reilly Scholarship in Environmental Science** will be offered to an incoming student in fall of 2004. As in past years, the Ken Damaan Award will be presented to a deserving student who has demonstrated research potential in the general area of aquatic ecology. Also, we are all quite excited by the activities of the Brockport Environmental Awareness Network (BEAN). This student group has an article on page 2 that should be of interest to you.

"Students Need to Acquire Skills As Well As Knowledge"

Dr. Geoffrey Gardner

As an undergraduate, I found that ecology classes were always the more interesting and challenging courses. They were taught with less emphasis on memorization of pathways and formulas and more on problem solving and application of knowledge. I have modeled my teaching approach to this concept. Students need to acquire skills as well as knowledge. These skills include critical and creative thinking, ability to organize and structure information, effective communication, and the ability to apply concepts to real life situations Acquisition of these skills not only helps the student process and understand the material for

the course but helps the student in processing and understanding material for future courses.

In environmental science, students must be familiar with not only biology but also chemistry and earth sciences. The underlying thread that ties these subjects together is the scientific method. While this can be taught in lecture, the best method for teaching the scientific methods is through the experience of trail and error. The laboratory section of my "Ecology course" is an opportunity for students to take what they have learned in lecture and apply it to questions they have about their natural environment. While this sometimes can be frustrating, such as times when students well thought out experimental design yield no results, the experience gained is extremely valuable. By getting students involved in hypothesis development and testing, students can get a better understanding of the process.

As a graduate student, it was taught to me that there are two ways to approach learning in the sciences. One is research, which emphasizes the **REsearch** where students must review and study past theories and experiences; the other **is reSEARCH,** which emphasizes the SEARCH, where students are encouraged to use their creativity and independence to discover on their own. Environmental science requires both, and so I try to incorporate both into my classes. Students interested in talking with me are welcome to stop by my office (Room 117 Lennon Hall).

Students in the News

Heather Angel (BS '98) graduated from Brockport with an interest in limnology and watershed analysis. For several years she worked for the Institute of Ecosystem Studies in Millbrook, NY. Currently, she is working for Dow Chemical Company in Cairy, North Carolina, where she performs research and development for the industrial and architectural coatings market.

Carol Cloen (MS '96) recently obtained the position of Lead Scientist for HCP. Carol will be in charge of putting together a plan that covers all publicly owned submerged lands in the State of Washington – roughly 2.4 million acres.

BEAN – Brockport Environmental Awareness Network

"Student group leads the way on environmental issues"

The goal of Brockport Environmental Awareness Network (BEAN) is to make our campus community aware of environmental issues and problems, to find ways to decrease the environmental impact of our campus community, and to have fun while doing so. BEAN is a BSG-funded club with membership open to anyone interested – students, faculty, or staff at SUNY Brockport.

Pat Kendall is BEAN's current president. During the fall of 2003, Rachel Amon served as treasurer, and Kylie Ryan as secretary. Meghan Tomberlin and Konstantin Boychinov were involved in activities planning. Other BEAN members worked on several ongoing projects attempting to increase recycling, decrease energy use, and minimize food waste here on campus.

The Recycling project team consisted of Nadine Cohen, Jim Delbert, Stephanie Neubert and Meghan Tomberlin, who surveyed several classroom buildings and dormitories to see which rooms lacked recycling bins. They also surveyed several sports activities, checking on availability of recycle bins. They reported their findings to Rick Lair, Director of Facilities Maintenance. In order to encourage students to recycle more, they posted flyers in dorms showing what materials can and cannot be recycled with our current system.

Tom Hildebrande, Matt Maar, and Bill Pierson investigated energy usage on campus, specifically in dormitories. They acquired printouts of monthly energy consumption for six dorms, and compared consumption levels

BEAN members Jessie Bucholz, Rachel Furey, Pat Kendall, and Jeffrey Nichols checking out solar panels at Bill Labine's solar home in Avon.

between dorms. They also posted flyers in selected dorms suggesting ways that students could decrease energy consumption.

Jennifer Case and Hollee Schwingle were concerned with the amount of food wasted in campus dining halls. They worked with Gary Stevens, Dining Service Director, to include a question about portion sizes in his annual student survey. They then made trifolds to place on dining tables, explaining why food waste is a problem and how to minimize it. They also investigated composting as an alternative to land filling food waste, and discussed their findings with Gary Stevens and Rick Lair.

In October, BEAN members Jessie Bucholz, Rachel Furey, Patrick Kendall and Jeffrey Nichols toured a home in Avon that is powered by renewable energy. The home has eight solar panels on its roof, which create electricity from sunshine, and the electrical power is stored in a battery bank in the basement of the home. An addition to the house was designed to capture the sun's energy through large south-facing windows, and store it in the thermal mass of a ceramic tile floor. The house also incorporates many other energy-saving devices, including triple-pane windows, thermal window quilts, energy-saving appliances and compact fluorescent bulbs throughout the house. The shower is equipped with a heat exchanger, which captures the heat from the wastewater, and transfers it to the clean water, resulting in an "Endless Shower" without running out of hot water.

The homeowner, Bill Labine, also drives a biodiesel car. LaBine combines used frying oil and lye in a process, which yields biodiesel fuel for his car and glycerin as a byproduct. The fuel can be used in any vehicle with a normal diesel engine; Labine's car is a Volkswagen Passat wagon. LaBine states that he gets 43 mpg, and the fuel costs very little since he gets the oil free from a local restaurant.

Editor's Note: Several members of BEAN will present their research on Scholar's Day on April 14, 2004.

Bahamas Course a Success

Nineteen students from SUNY Brockport, SUNY Albany, SUNY Oneonta and Onandaga Community College had the difficult job of spending two weeks, 27 December to 12 January 2004, at the Gerace Research Center, San Salvador, Bahamas, as part of the Brockport sponsored Marine Biology course. The highlights of the course, which includes diving and snorkeling reefs, were an encounter with a "spotted eagle ray" and the sighting of several young "hawksbill sea turtles". The "hawksbill sea turtle" is a threatened species and apparently is successfully breeding on the island again. Meeting a "spotted eagle ray" while diving or snorkeling can be an experience of a lifetime. They are up to 8 feet in width and 12 feet in length. Dr. James Haynes ably leads the courses each year. Next year's course is already in the planning stage. Dr. Haynes' office is in Room 121 Lennon Hall.

New ES&B Student Meeting Room

With the arrival of the spring semester, work was completed on a new room for students to congregate. Room 108a in Lennon Hall is larger, has several aquaria, bench space and other amenities design with students in mind.

Tentative Fall 2004 Schedule

ENV 201/202 Env. Sci.
Dr. Haynes
MWF 1:15-2:15
Lab W or F 9:30-Noon

ENV 303 Ecology
Dr. Gardner
T/R 9:45-11:15
Lab M or W 1:15-4:15

ENV 406/BIO 506 Wildlife Ecology
Dr. Norment
T/R 9:45-11:15
Lab F 1:00-5:00

ENV 419/BIO 519 Limnology
Dr. Makarewicz
T 6:00-9:00

ENV 421/BIO521 Limnology Lab
Dr. Makarewicz
R Noon-5:00

ENV 427/BIO 527 Animal Behavior
Dr. Norment
T/R 1:15-2:45

ENV 437 Biological Investigation Data Interpretation
Dr. Gardner
M/W 5:30-7:00

ENV 457 Marine Biology Bahamas
Dr. Haynes
M/W 3:45-5:15

ENV 490/ BIO590 Fish Techniques
Dr. Haynes
T Lab Noon-5:00

BIO 614 Experimental Design
Dr. Gardner
M/W 5:30-7:00

Env400/500 Plant Taxonomy
Dr. Gardner
MWF 9-10:00, M 2-5:00

United State Department of Agriculture Scientific Workshop 2004

On 19 January 2004, 23 scientists from SUNY Brockport, SUNY Geneseo, Rochester Institute of Technology and Cornell Cooperative Extension met at SUNY Brockport to review and report on their USDA funded research project titled "Experimental Manipulation of Entire Watersheds through BMPs: Nutrient Fluxes, Fate and Transport and Biotic Responses". The project, which focuses on development and implementation of agricultural management practices and dissemination of results to the Finger Lakes agricultural community, involves local and state government bodies, agricultural agencies, farmers, and other scientists at Brockport, Geneseo and Rochester Institute of Technology. The USDA money will enable Drs. Makarewicz, Noll and Zollweg (Brockport) and Bosch (Geneseo), in partnership with the Livingston County Soil and Water Conservation District and Cornell Cooperative Extension, to demonstrate and measure the impact of various land management practices at farms in the Conesus Lake watershed. Under the project, Makarewicz and graduate assistants at Brockport will focus on measuring loss of nutrients from agricultural land through streams and into the lake. Bosch and his students at Geneseo will continue to monitor algae and weed growth in the lake. Over the past two years, findings from these two areas of research have suggested that stream runoff of nutrients from watersheds dominated by agriculture may be promoting the growth of filamentous algae and Eurasian water milfoil in certain parts of the lake. These plants are recognized as a problem throughout the lakes of North America and as a major cause of water quality degradation in Conesus Lake. The primary goal of the project is to demonstrate how management strategies can reduce soil erosion and loss of nutrients from agriculture and help reduce the growth of plants in the lake. If you are interested, contact Dr. Makarewicz in Room 125 Lennon Hall.